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EMPOWERING TIMES



THINKING ALOUD
Technology and the Farm
Sector: A Slow Dance
Jay

PODIUM

Krishna Kumar
Founder & CEO, Cropin



WE RECOMMEND
A Pioneer's Journey: 'SERVE'
B S Nagesh
Reviewed by Jay

Dear Reader,

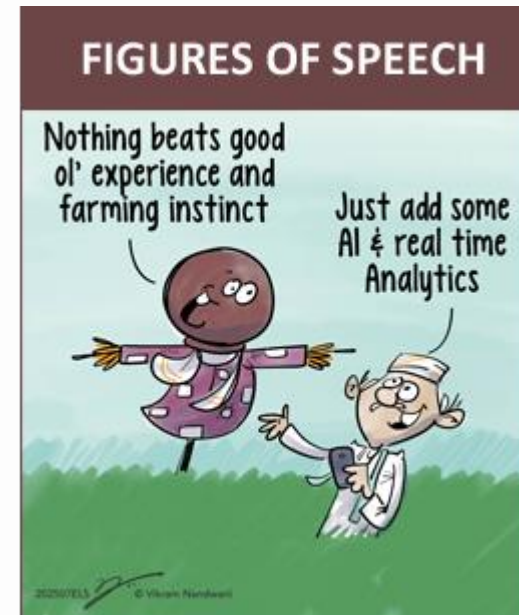
As the world grapples with escalating climate uncertainty, food insecurity, and the ever-growing demands of a rising population, agriculture finds itself at the crossroads of necessity and innovation. And quietly but steadily, data is beginning to lead the way.

What was once a sector driven by instinct, tradition, and seasonal wisdom is now being reshaped by AI models, satellite intelligence, and predictive analytics. Farmers today are not just tilling land - they're engaging with digital dashboards, analysing weather patterns, and making real-time decisions guided by data. The ground beneath agriculture is shifting, and not just literally. From early disease warnings and climate adaptation to smarter input use and traceable supply chains, technology is enabling a new kind of agility - one that allows food systems to be more efficient, equitable, and climate-resilient. This isn't just an upgrade in tools - it's a transformation in mindset, redefining who participates, how decisions are made, and which outcomes to expect across the farm-to-fork value chain.

But philanthropy today isn't just about giving money. It's about working together, sharing ideas, and supporting long-term solutions. Thanks to technology, we can now do more - like track forests, support farmers, and improve healthcare in ways that weren't possible before.

This month, **Empowering Times (ET)** explores the theme *'From Data to Insight: The Game-Changing Potential of Smart Agtech'* - a deep dive into how intelligent technologies are reinventing one of humanity's oldest professions.

In the **Thinking Aloud** section, **Jay** reflects on the slow but inevitable waltz of technology into India's agricultural heartlands. He explores why agriculture has been resistant to change and yet how the convergence of digital tools, predictive insights, and market forces may now be tipping the scales toward long-overdue reform. On the **Podium**, **Krishna Kumar, - Founder & CEO, Cropin** - shares the remarkable journey of building the world's first industry



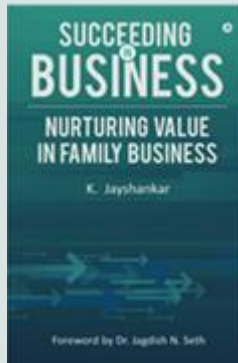
cloud for agriculture. In a compelling conversation, he lays out how AI, climate intelligence, and satellite-powered insights can re-architect the agri-food ecosystem - from empowering the smallholder farmer to reimagining sourcing strategies for global food companies in a climate-stressed world. In the **We Recommend** section, **Jay** reviews **Serve**, an inspiring memoir by B.S. Nagesh, chronicling the birth and growth of Shoppers Stop as India's pioneering organized retail chain, blending his personal journey of service-driven leadership with the transformation of the Indian retail landscape from bazaars to modern department stores.

In **Figures of Speech**, **Vikram's** toons pitch old-school farming against next-gen insights.

Please also [Click Here](#) to check out our Special issue of ET, which is a collation of selected themes that were featured over the years highlighting the changing landscape of the business world. This special edition has been well received and can be [Downloaded Here](#) for easy reading and is a collector's item.

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THINKING ALOUD

Technology and the Farm Sector: A Slow Dance

Jay

Agriculture without technology is like driving without headlights on a dark night. Sure, you will get home, with luck and good fortune, but is it worth the risk and the anxiety?

Of course, there are some who still hark back to a mythical time when an imagined pristine world existed where mankind lived in agrarian freedom. There is a reason why that is in the past: it was not a period that mankind wanted to hang on to and decided to progress onwards by developing and harnessing new mechanisms. The advent of modern information technology is a logical extension from those old times. The outcome that we have arrived at is the world of agritech, and the sooner we embrace it with gusto, the better for society.

Large-scale agriculture in India has been described as a gamble with monsoon. The individual farmer has been the inveterate player who finds himself stuck to the gaming table, heady and happy when he wins but unable to walk away with his gains, which in a few rounds, he dissipates. The best way to tackle the vagaries of nature is to examine avenues for deploying the power of technology in harmony with nature.

This is best envisaged by considering the whole spectrum of activities that are part of the value chain associated with agriculture. Each component of the sequence is ripe for reinvention, from the input end to the throughput and the final farm output. Both scale and commercialization offer up an invitation to redesign every element that had been taken for granted by the traditional farmer.

Let's start with soil and climate, two aspects that had been conventionally taken as natural forces. Progressive ideas enable farmers to not only assess whether soil is appropriate to their cultivation methods but by working

with meteorologists, to make better forecasts and finalize the optimum time for planting and harvesting. The domain of agritech today encompasses concepts like precision agriculture, AI-based climate prediction, digital solutions for all farm-based challenges - from supplies management to marshalling finances - and ultimately, e-commerce solutions for warehousing, distribution and sale of farm produce.

Consider the benefits of this holistic reinvention: better crop yield and farm productivity, and a better quality of life all round to the stakeholders of the farm sector. The journey from farm to the urban table not only has many touch points but also is a journey across economic and social systems, which, taken together, create a nation. Across countries, agrarian agonies make headlines when they become collective tales with the potential to shake political power-centres. Consequently, the need to address issues in this domain is both poignant and prickly in terms of uncertainties. These may well be the reasons why caution is exercised when attempting to reform a country's agrarian structure. But the failure to take courageous steps when needed prevents growth in the sector.

The hesitation to move forward is symptomatic of the fear of change and progress that large numbers in any society suffer from. When viewed as disruption, the fearful feel threatened and cling to present conditions, even when they are patently uneconomic, unrewarding and painful. Therefore, it is for the purveyors of change to market the benefits of new technology as opportunities exist in shifting from the familiar. Be it in horticulture, dairy, apiculture, aquaculture or any of the other traditional occupations in the farm sector, there lie immense prospects for those willing to engage with new ideas, methods and with a zest for the off-beat and novel. This is feasible through avenues offered through government agencies, multilateral groups as well as private sector and NGO involvement.

While there has been a significant rise in agricultural output all round in India, the adoption of new technology has never been a happy embrace. Scepticism abounds whenever a new concept is introduced - after all, many tongues wag merrily in a democracy. Generating awareness is a slow burn at times but step-jumps have happened when crisis occurs. The digitization push created due to demonetization is a good example of how behaviour modification is induced due to environmental shifts. The farm sector is benefitting from the telecom revolution in particular but vested leadership of vocal farm bodies has been a bane that hinders speedy acceptance of novel ideas.

In sum, the slow waltz is unlikely to change into a fast jig anytime soon, despite the best attempts to persuade the DJ to change his playlist.

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Podium

Krishna Kumar

Founder & CEO, Cropin



Krishna Kumar is the Founder and CEO of Cropin, a global Agtech leader and the creator of Cropin Cloud - the world's first industry cloud for agriculture. With a vision to build a connected and intelligent agri-ecosystem, Krishna has been at the forefront of transforming traditional farming into a data-driven, traceable, and high-value enterprise.

Under his leadership, Cropin has pioneered the use of AI, data science, and cloud technologies to address some of agriculture's most pressing challenges, empowering stakeholders across the value chain to maximize per acre value and drive sustainable outcomes at scale.

Krishna holds a bachelor's degree in engineering from Visvesvaraya Technological University and serves as a non-official member of the National Startup Advisory Council, appointed by the Government of India.

Beyond his mission to revolutionize global agriculture, Krishna is an avid traveler and reader, always curious about the world and its possibilities.

ET: Agtech is a buzzword today, but back in 2010, it wasn't mainstream when you founded Cropin. Tell us about your journey, and what made you believe that data and technology could transform agriculture?

KK: You're absolutely right - when we started Cropin in 2010, "agritech" wasn't even a word people used. I was working at GE at the time, and the decision to leave and build something in agriculture was driven more by EQ

than IQ. It was born from a deep emotional response to the systemic challenges faced by smallholder farmers rising debt, failed crops, economic vulnerability, and very little support. You could see the distress play out in headlines every season. It became impossible to ignore.

But beyond the emotion, I also saw a gap and an opportunity. I had seen how data and technology were transforming industries like banking, healthcare, and logistics. Yet agriculture, one of the oldest and most important sectors, was left out. The sector had made some incremental progress, but the power of emerging technologies hadn't truly reached the farmgate. That sparked a belief: what if we could make agriculture data-driven, and democratize access to that intelligence across the entire value chain?

That's how Cropin was born. We started by building SmartFarm (now Cropin Grow), the first digital operating system for farms to bring structure, traceability, and predictability to farming. Our vision was to treat farms like modern production units, where every activity is recorded, analyzed, and optimized, just like a factory floor. There was no playbook for this. We had to create the standard operating procedures, the product architecture, and the entire data layer from scratch.

Over the years, what began as a small experiment has scaled into a global platform. We've digitized over **30 million acres**, impacted more than **7 million farmers**, and deployed solutions in **103 countries**. Our AI engine has generated intelligence on over **1 billion acres of cultivable land**, making Cropin the world's largest deployed AI platform for food and agriculture.

Looking back, what gave us conviction wasn't just the power of technology, but the clarity of purpose: to build a future where farming is not a gamble but a reliable, resilient, and climate-smart enterprise. Cropin was born as a challenger and we remain committed to disrupting the status quo to make the agri-food ecosystem more profitable, sustainable, intelligent, and traceable.

ET: What are the biggest changes you see coming in agriculture in the next 5 to 10 years because of smart technology?

KK: I envision a future where agriculture operates with the precision of a modern factory, fully predictable and resilient. Today, however, it remains vulnerable to climate shocks, market volatility, and geopolitical disruptions. This is where smart technologies will lead a fundamental shift in the next five to ten years.

We are moving from intuition-based farming to intelligence-led decision-making. With the integration of satellite imagery, climate data, and AI, farming will shift from being reactive to becoming predictive. Farmers and agri-businesses will gain the ability to foresee and manage risks such as droughts, pests, or yield fluctuations well in advance.

One of the most transformative developments will be the rise of agentic AI. These intelligent systems will become part of daily operations, helping stakeholders make informed decisions. Whether it is choosing the right crop for the season, scheduling irrigation, detecting early signs of disease, or managing supply chain disruptions, AI agents will function like intelligent Food-Agri architects for every stakeholder, from farmers to procurement heads. They'll analyze millions of data points, engage in natural language conversations, and automate decisions that currently require expert human judgment.

Climate-smart agriculture will also take center stage. While agriculture currently contributes significantly to global emissions, it has the potential to become the largest carbon sink through regenerative practices and data-driven input management. This shift will make farming not only more sustainable but also more profitable.

The role of the farmer will evolve. Manual tasks will be automated, and farmers will be empowered with actionable insights that improve efficiency and increase incomes. Crop lifecycles will become more predictable, enabling food companies to plan sourcing with greater accuracy and flexibility.

In this new paradigm, agriculture will be intelligent, adaptive, and climate-resilient. Data will be as important as rain, and AI will quietly guide millions of decisions every day. At Cropin, we are building this future, one that is sustainable, inclusive, and ready to meet the food and climate challenges of tomorrow.

ET: Many people talk about climate change - how can technology like Cropin help farmers deal with changing weather and growing conditions?

KK: Climate change is already disrupting how we grow and source food. Farmers are facing unpredictable weather, rising pest outbreaks, and shifting growing zones. At Cropin, we help make agriculture climate-smart by providing real-time, AI-powered insights that enable proactive decisions - from selecting resilient crop varieties to optimizing water and input use.

According to the FAO, plant diseases cost the global economy \$220 billion each year, while invasive insects account for another \$70 billion. Our Disease Early Warning System helps mitigate the growing threat of pests and diseases, while Cropin Sage, our AI-led intelligence platform, empowers governments, growers, and agri-businesses to adapt sourcing and production strategies in response to changing climate conditions.

We're also building a global crop knowledge graph, mapping every grid of food-producing land on Earth. It captures past trends, current crop conditions, and future predictions, layered with the impact of climate on specific crops and varieties. These insights help stakeholders plan better, reduce risk, and build more resilient food systems. For agri-food businesses, smart technologies are unlocking a new level of agility in sourcing and cultivation strategy. Take crops like coffee, cocoa, or citrus, which are highly sensitive to climatic shifts. If traditional growing regions become unviable, our AI-led agri-intelligence engine can help identify emerging climate-suitable regions, guiding companies to realign sourcing decisions before risks materialize. This kind of forward-looking capability is essential to building climate-resilient supply chains.

In essence, Cropin transforms data into foresight. We help farmers and businesses move from reactive to predictive, from vulnerable to resilient. Whether it's protecting yields, guiding sustainable practices, or enabling intelligent sourcing, technology is not just supporting agriculture in the age of climate change - it's re-architecting it for a more secure and sustainable future.

ET: What role do you see AI playing in addressing major agricultural challenges like climate variability, yield gaps, and food security?

KK: I personally believe that while AI is revolutionizing industries across the board, two sectors will witness the most profound, human and planet-centric transformation: Healthcare and Agriculture. These are not just

industries, they are lifelines. Let me highlight **Cropin Sage**, the world's first real-time Gen AI-powered agri-intelligence platform. Sage empowers agri-food stakeholders to predict future yields, effectively helping them predict the future of food itself. It's a leap toward making agriculture more resilient, intelligent, and sustainable.

Cropin Sage converts the world's agricultural landscape into a proprietary grid-based map with options of 3x3 meters, 10x10 meters, or 5x5 kilometers, delivering data and intelligence with unprecedented scale, accuracy and speed. This innovation from Cropin fuses state-of-the-art technologies such as Generative AI, multi-layered global climate data, a global crop knowledge graph, earth observation data and advanced crop models. This synergy aims to unlock the untapped potential of crop production planning, marking a significant advancement in precision and sustainable agriculture. Sage empowers growers, governments, agribusinesses, financial institutions, and multilateral agencies to forecast yields, assess climate suitability, and plan smarter sourcing strategies. In effect, Sage helps stakeholders predict the future of food, pinpointing where and how crops should be grown in a climate-stressed world. This translates to pinpointing the ideal locations and favorable conditions for growing crops on a global map, helping to build a robust and resilient food system - a previously unimaginable feat.

This is not just innovation - it is a critical step toward building a more resilient, intelligent, and sustainable global food system. AI, when applied with purpose, can be one of the most powerful tools we have to secure the future of agriculture.

ET: What kind of support do farmers need - beyond technology - to fully benefit from platforms like Cropin?

KK: Technology is a powerful enabler, but for farmers to truly benefit from platforms like Cropin, they need an entire ecosystem of support. The biggest hurdle today isn't a lack of willingness to adopt technology - farmers across regions, from India and Africa to North America, are increasingly open to using advanced tools and data-driven insights. The real barrier is economic viability.

The cost of access often stands in the way, especially for smallholder farmers. That's why at Cropin, we've deliberately chosen a **B2B model**, where the cost is absorbed by enterprise clients, governments, or development agencies working with farmers. This ensures that the technology reaches those who need it most - without burdening the farmer directly.

Beyond affordability, farmers also need trusted advisory support to interpret and act on insights. Digital tools must be complemented by agronomists, field staff, or local partners who can guide on-ground decisions in real time. Capacity building and digital literacy are equally essential to ensure inclusive adoption, particularly in regions where farmers are new to digital ecosystems.

In addition, access to credit, inputs, and markets is critical. Even the best recommendations are meaningless if a farmer cannot afford the right seeds or get a fair price for their produce. Platforms like Cropin are most effective when integrated with financial services, insurance providers, and supply chain enablers.

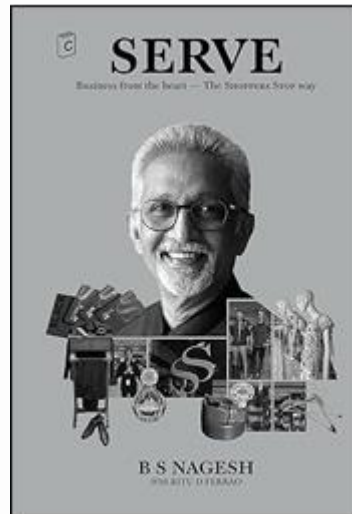
Finally, we must recognize that enabling digital agriculture at scale is not the farmer's responsibility alone. **Governments, development institutions, and private sector players** must work together to create the infrastructure, policies, and funding mechanisms needed to support adoption. That includes investments in connectivity, digital land records, and open data frameworks.

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We Recommend

A Pioneer's Journey: 'SERVE'

B S Nagesh



The inexorable rise of the service sector is considered to be an indicator of economic development of a nation. The shift in India has been dramatic since the dawn of liberalization. The increase from an average share of 30% of GDP in the pre-1990s to over 55% today marks a tale of rapid change in the economic landscape. An interesting aspect of this is the role played by the Retail sector. Estimated to be around USD 1.3 trillion at present, only 12% of it (about USD 150 billion) is from the organized retail business, and this segment is set for rapid growth to 20% by 2035, as per market expectation. Clearly, the Indian consumer's healthy appetite for goods and services is driving this growth. Today we are witnessing the play by big business groups, with Reliance Retail emerging as the biggest name, both in revenue (Rs. 3,30,870 crores) and profitability (EBITDA of Rs. 25K crores for March 2025) and size (nearly 20K stores across India).

But how did this journey of organized big Retail start? Cut to 'SERVE', the story of Shoppers Stop, by its founding General Manager, long-time CEO, and now Chairman, B S Nagesh.

Nagesh's memoir narrates the rise of this pioneering venture from the ambitious vision of real estate barons, Chandru Raheja and Gopal Raheja. Joining the K Raheja Group (now helmed by Chandru Raheja's sons) in 1991, after a decade spent in the retail sector, Nagesh was given free rein and total support to fulfill his dream of creating and managing a first-of-its-kind large format department store. With 50K square feet as his creative playground,

Nagesh built a team around him that today runs 74 stores across 35 cities in India, with a turnover of over Rs. 43K crores.

While India already had well known department stores in certain cities (Akbarally's in Bombay, Viveks in Madras, Nilgiris in Bangalore, and India's own first supermarket, Super Bazar in Delhi), Shoppers Stop set new standards in Retail offering India's rising consumer class a taste of international shopping. Converting an old multiplex complex at Andheri, a distant suburb, into Bombay's ultimate shopping destination was an audacious and risky move at a time when South Bombay's elite still ruled the city (it had not become Mumbai yet!), but that is what makes the entrepreneurial tales in the book interesting.

Nagesh's personal journey and life lessons are woven into the book's narrative to explain how he converted crucial events from his childhood into drivers in his business career. A small-town boy who gave wings to his dreams after forsaking his ambition of joining the armed forces, Nagesh's humble touch reflects the essence of the magic needed to succeed in the retail sector: the willingness to 'serve' others, in this case customers. Recognizing that the employees come first, the firm pioneered human resources and organization design ideas novel to India, through designations (everyone is a Customer Care Associate), training and career development, and many other initiatives that are a standard feature today not just in retail but in any forward-looking firm. The intent was clear: offering appealing and modern products to customers in a superior ambience needed a team that used latest technology and had a true spirit of service.

Shoppers Stop went public in 2005 after many ups and downs, and challenges abound even today, as is natural in business. However, their name shines bright. Three decades on, a new generation of urban Indian consumers - who have grown up on burgers and pizzas - find malls commonplace, international products passé, and are hooked to YouTube Shorts. With online shopping and e-commerce offering instant gratification, large format stores stare starkly at an existential dilemma. Nagesh finds them equally challenging and has no ready answers for this new inflection point. However, the good news is that new markets await in tier-2 and tier-3 towns where a hungry India awaits.

What Shoppers Stop (and Nagesh) will always be noted for is their contribution to a revolution in the organized retail market – a non-existent segment when they began their journey in 1991. Today's Retail Associate is a far cry from the untutored and anonymous counter salesman who was once the norm in India's bazaars. Equipped with

knowledge, skilled in IT, and trained in the art of customer service, there is a new breed out there who aims to make a customer's life easier. Through their perilous first decade in business, Nagesh and his team (with the total support of the Raheja family) taught a generation of Indian customers what international retail is all about, and let other bigger players (Trent, Lifestyle, Croma, DMart, Tanishq, et al) build on their success.

For his part, Nagesh set up the Trust for Retailers and Retail Associates of India (TRRAIN) in 2011 and has continued to build the Retail sector by creating a trained and inclusive workforce.

As a history of the early days of a nascent industry, 'SERVE' is an easy read and an important contribution to the growing literature on India's business world. While Nagesh could have shared more on the managerial challenges of running the firm, and the owner's role, let that not deter someone who wants to understand how an intrepid leader created a market with innovative promotions and ushered in a novel consumer revolution in socialist India.

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THROUGH THE LENS



Nature photographer **Rupesh Balsara** spots the Rufous-necked Snowfinch a high-altitude bird found in parts of northern India, particularly in the cold desert regions of Ladakh. It inhabits rocky slopes, barren plateaus, and alpine meadows above 4,000 meters, where vegetation is sparse. This snowfinch feeds mainly on seeds, insects, and small invertebrates, foraging on the ground in flocks. Adapted to extreme conditions, it often nests in crevices or abandoned rodent burrows to protect its young from the harsh mountain climate. Though not widely studied in India, it plays a subtle yet vital role in the fragile Trans-Himalayan ecosystem.

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